

# Eastern Michaud Flats

## Informational Briefing

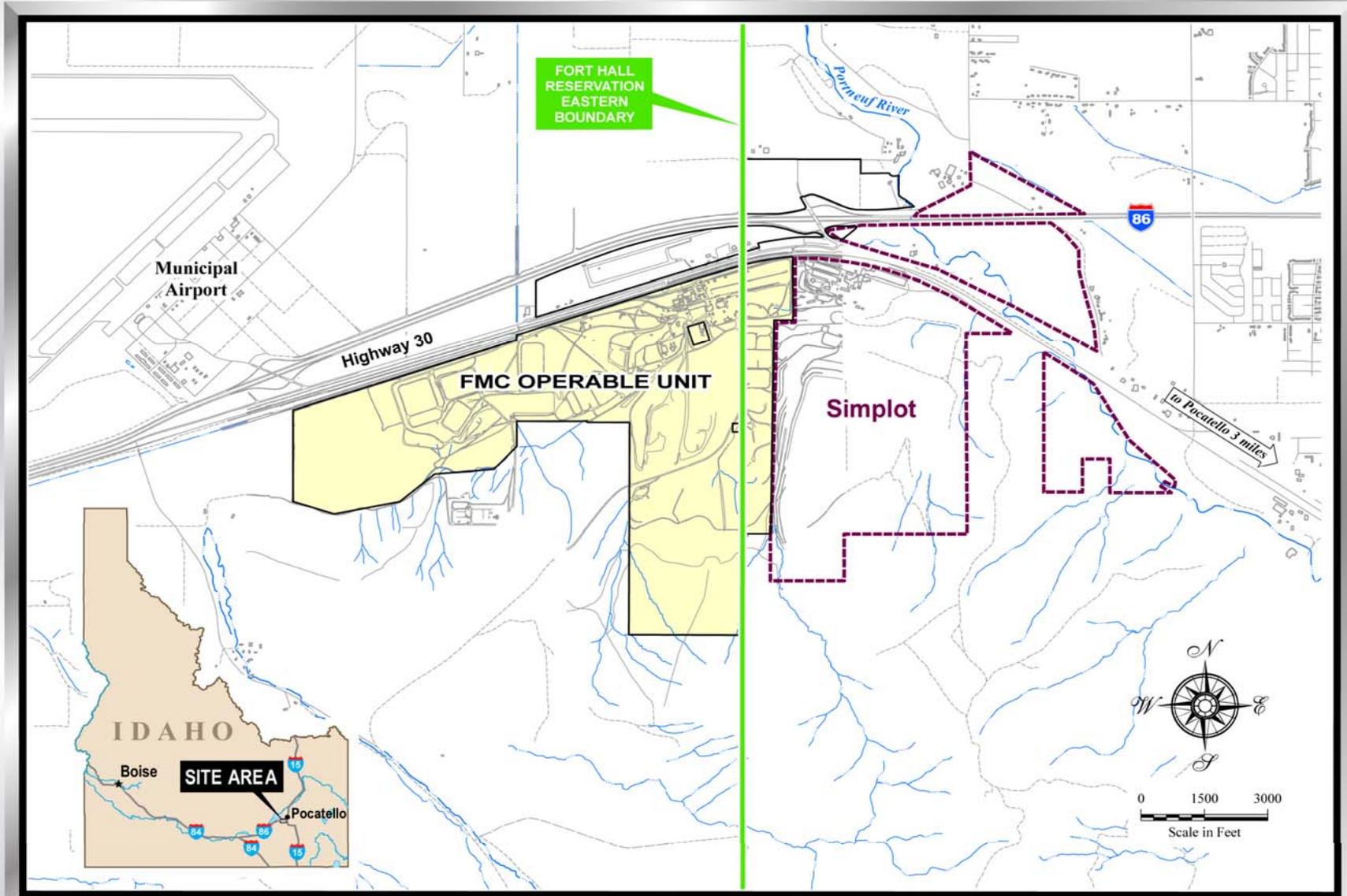
### Agenda:

- Opening Remarks – Sue Skinner
- EMF / CERCLA – Kira Lynch
- FMC RCRA – Carla Fisher
- FMC Pond 16S – Mark Masarik
- Q&A Session – Mark Masarik

# Eastern Michaud Flats

- EMF Superfund Site Includes FMC, Simplot and an Off-Plant Operable Unit – The plants occupy an area of 2, 530 acres.
- Listed on National Priorities List in 1990.
- FMC – Manufactured elemental phosphorus from 1940 until December 2001.
- Simplot plant produces phosphoric acid using a wet process used for fertilizer.

# REGIONAL SETTING



# Eastern Michaud Flats

- Investigation began in 1990 at EMF resulting in a Superfund Record of Decision in 1998.
- Off-Plant area – Additional Work.
- FMC Area – Additional Work.
- Simplot Area – Ongoing remedial action design (RD/RA).

# Eastern Michaud Flats - FMC

- After FMC closed in 2001 Additional investigation was ordered in an agreement signed in 2003.
- Work Plan for a supplemental remedial investigation (SRI) was approved in May 2007.
- SRI sampling activities completed December 2007.
- EPA is reviewing the SRI report and the Supplemental Feasibility Study (SFS) Work Plan.

# RU<sub>s</sub> IDENTIFIED FOR SUPPLEMENTAL RI

## Legend



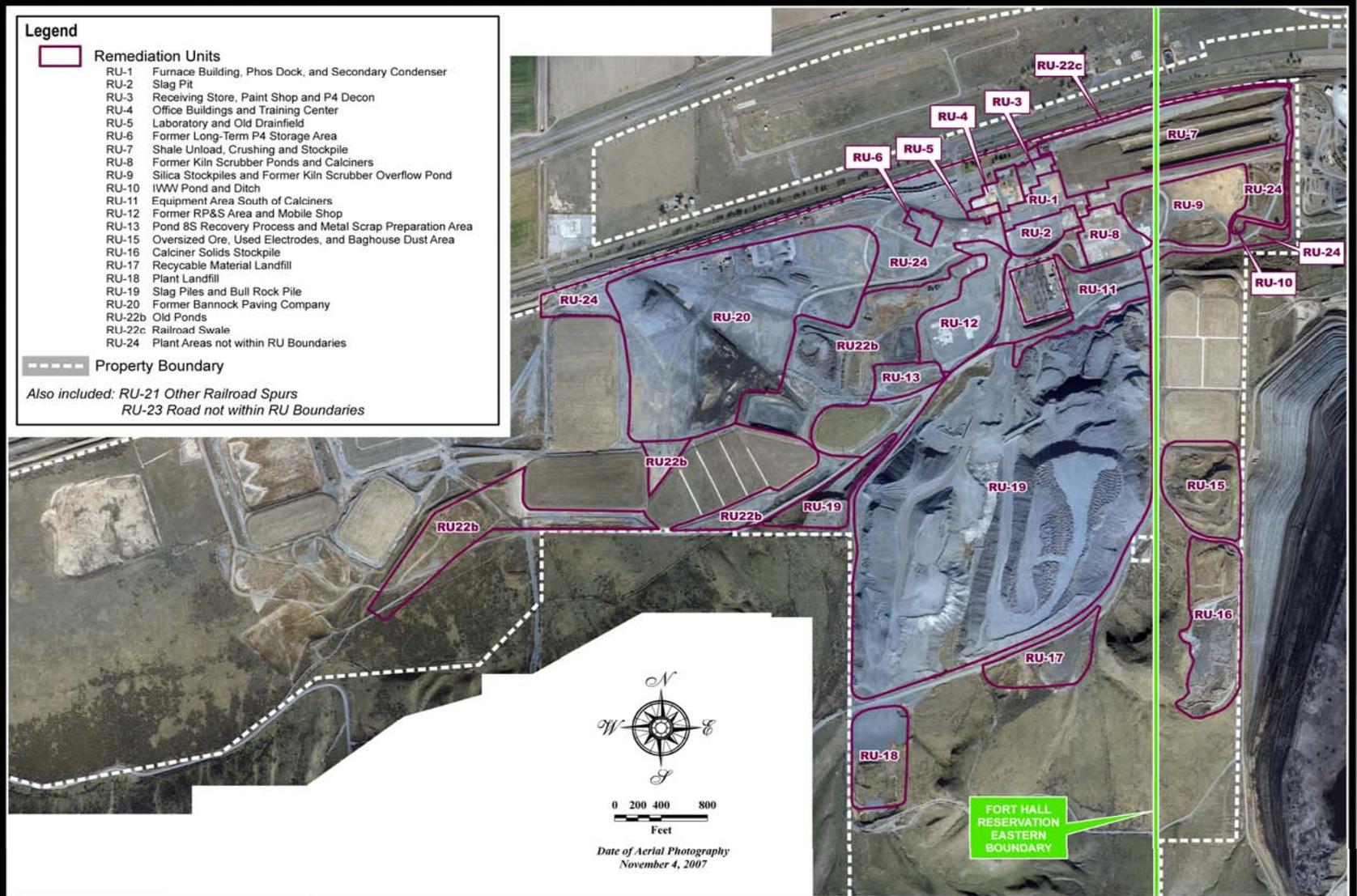
### Remediation Units

- RU-1 Furnace Building, Phos Dock, and Secondary Condenser
- RU-2 Slag Pit
- RU-3 Receiving Store, Paint Shop and P4 Decon
- RU-4 Office Buildings and Training Center
- RU-5 Laboratory and Old Drainfield
- RU-6 Former Long-Term P4 Storage Area
- RU-7 Shale Unload, Crushing and Stockpile
- RU-8 Former Kiln Scrubber Ponds and Calciners
- RU-9 Silica Stockpiles and Former Kiln Scrubber Overflow Pond
- RU-10 IWW Pond and Ditch
- RU-11 Equipment Area South of Calciners
- RU-12 Former RP&S Area and Mobile Shop
- RU-13 Pond 8S Recovery Process and Metal Scrap Preparation Area
- RU-15 Oversized Ore, Used Electrodes, and Baghouse Dust Area
- RU-16 Calciner Solids Stockpile
- RU-17 Recyclable Material Landfill
- RU-18 Plant Landfill
- RU-19 Slag Piles and Bull Rock Pile
- RU-20 Former Bannock Paving Company
- RU-22b Old Ponds
- RU-22c Railroad Swale
- RU-24 Plant Areas not within RU Boundaries

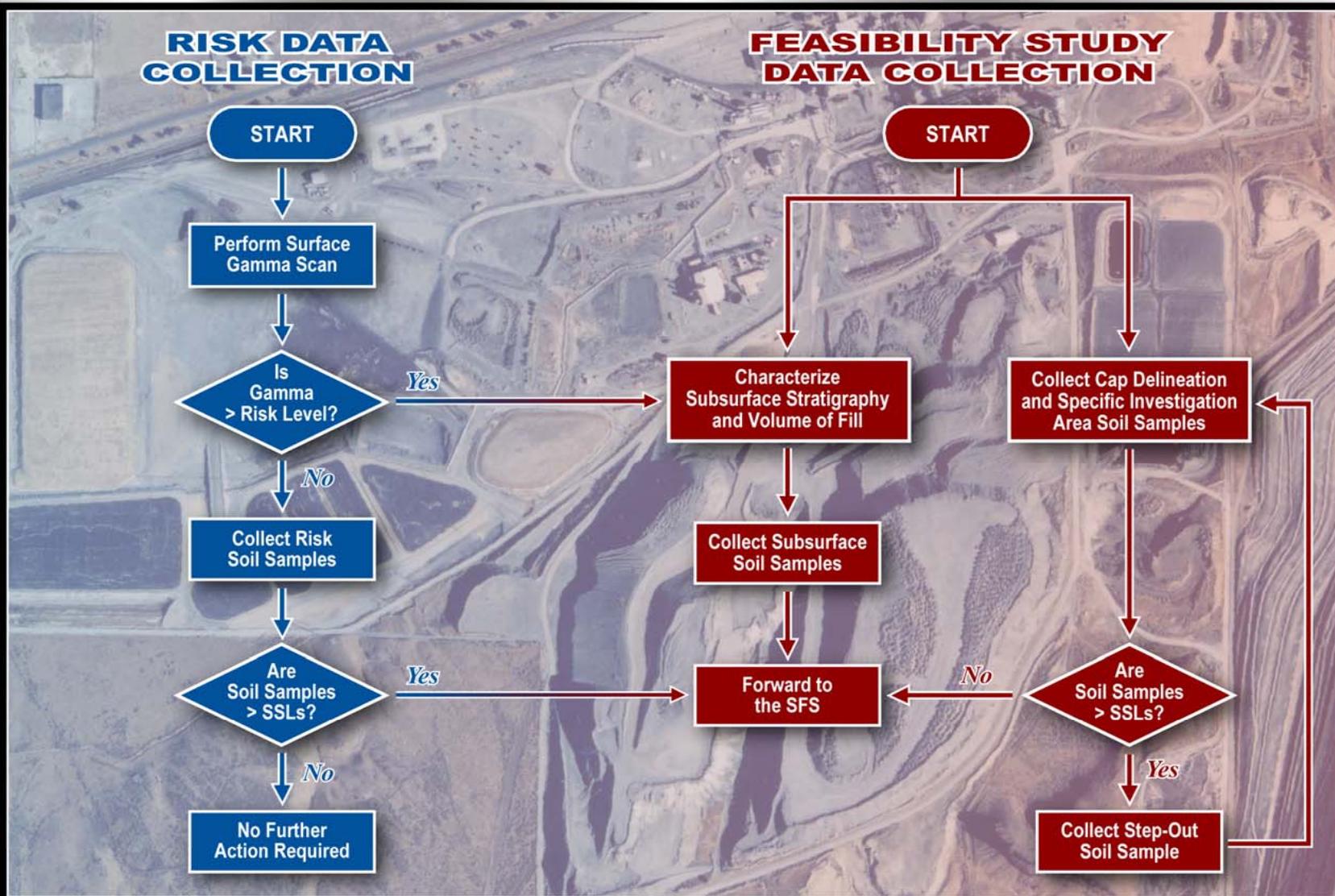


### Property Boundary

Also included: RU-21 Other Railroad Spurs  
 RU-23 Road not within RU Boundaries



# FMC OU SRI DATA COLLECTION FLOWCHART



# FMC OU – SRI Findings

- Results of the surface soil gamma survey were greater than the remedial action objectives (RAOs) for potential future workers external exposure to gamma radiation throughout all areas surveyed.
- All the remediation units (RUs) evaluated in the SRI will proceed to the SFS for evaluation of remedial alternatives.

# FMC OU – SRI Findings Cont.

- Residual elemental phosphorus (P<sub>4</sub>) from former spills and process leaks at the P<sub>4</sub> production, storage, and handling areas was encountered down to a depth of 85 feet below ground surface and extends laterally approximately 500 feet on FMC property.

# FMC PLANT OU PROJECTED CERCLA TIMELINE

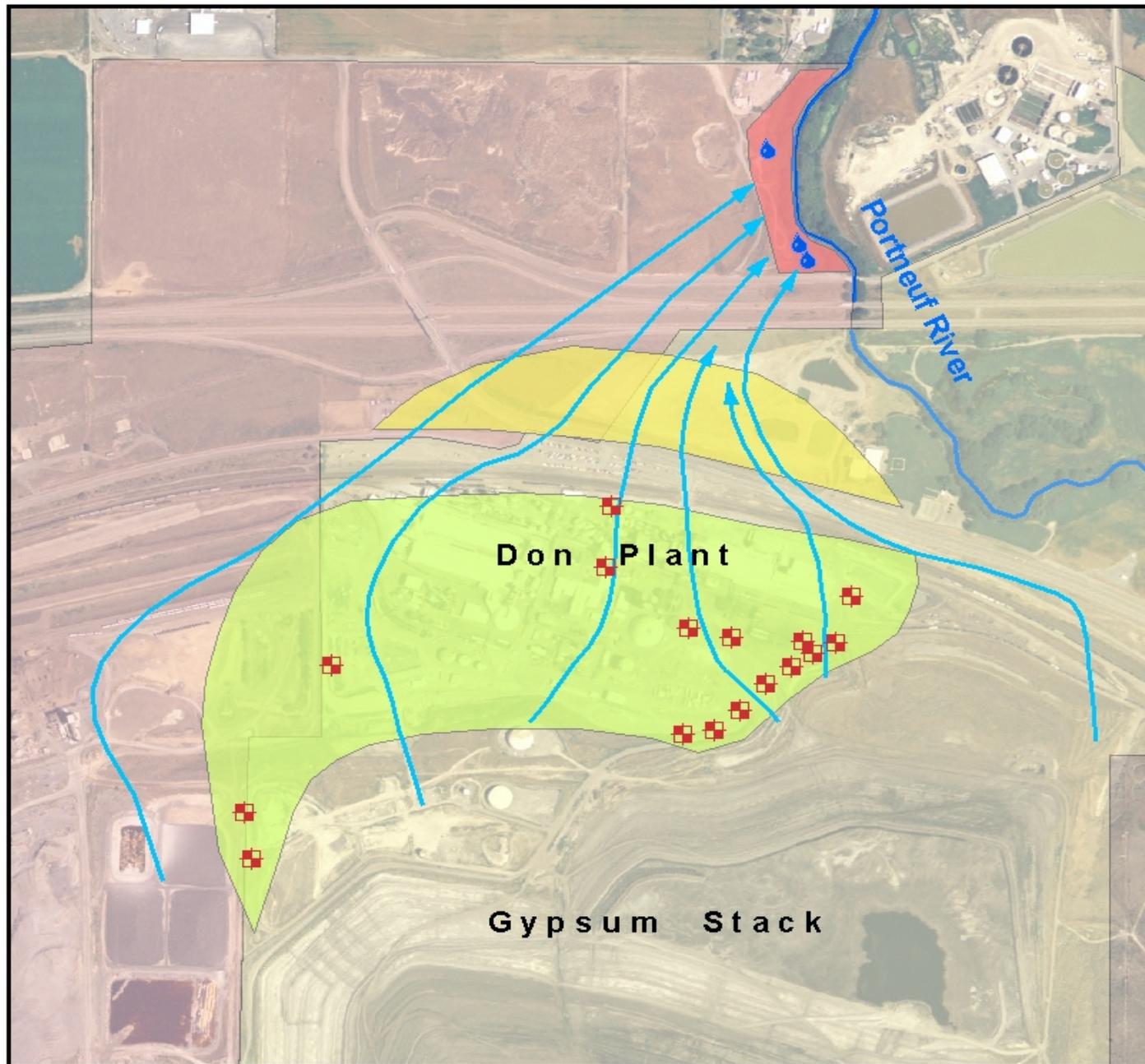
CERCLA PROCESS	REMEDIAL INVESTIGATION (RI)  Site Characterization and Risk Assessments	FEASIBILITY STUDY (FSI)  Development, Screening and Analysis of Alternatives	REMEDY SELECTION  Remedy Selection and Record of Decision
MILESTONES COMPLETED OR PLANNED	<p>EMF RI Report and Risk Assessments</p> <p>Supplemental RI (SRI)</p> <p>SRI Report and Updated Risk Assessments</p> <p>Groundwater Current Conditions Report and FMC Northern Properties Current Conditions Report</p>	<p>SFS Work Plan - Establish Remedial Action Objectives (RAOs), General Response Actions (GRAs), and Applicable or Relevant and Appropriate Requirements (ARARs)</p> <p>SFS Report</p>	<p>Proposed Plan Report</p> <p>ROD Approval</p> <p>RD/RA Consent Decree</p>
ESTIMATED TIMELINE	<p>AUGUST 1996</p> <p>MAY - DEC 2007</p> <p>JUNE 2008</p> <p>AUGUST 2008</p>	<p>JULY 2008</p> <p>1ST QTR 2009</p>	<p>4TH QTR 2009</p> <p>2ND QTR 2010</p> <p>4TH QTR 2010</p>

# Eastern Michaud Flats – FMC Schedule

- August 2008 – Groundwater and Northern Properties Report.
- Fall 2008 – Final SRI and SFS Work Plan.
- Fall/Winter 2008 – SFS Report.
- 4<sup>th</sup> Qrt. 2009 – Proposed Plan Report.
- 2<sup>nd</sup> Qrt. 2010 – ROD Approval.
- 4<sup>th</sup> Qtr. 2010 – RD/RA Consent Decree.

# Eastern Michaud Flats - Simplot

- Recently completed a field investigation to collect hydraulic properties of the aquifer and assess groundwater quality.
- This investigation was the second of two phases of field work planned to fill data gaps in support of the final remedial design.
- Additional characterization of groundwater surface water pathway and contaminant source areas in the phosphoric acid plant area is ongoing.

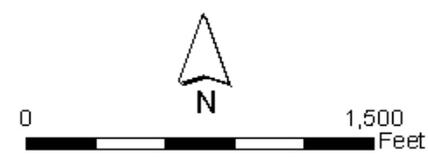


**Simplot Plant Area**

**Groundwater Extraction and Groundwater Monitoring Areas**

**Legend**

- Existing Extraction Wells
- Springs
- Groundwater Flow Path
- GW Extraction/Monitoring Areas**
- Target Extraction Area
- Extraction Assessment Area
- Compliance Area
- Operable Unit**
- FMC
- SIMPLOT



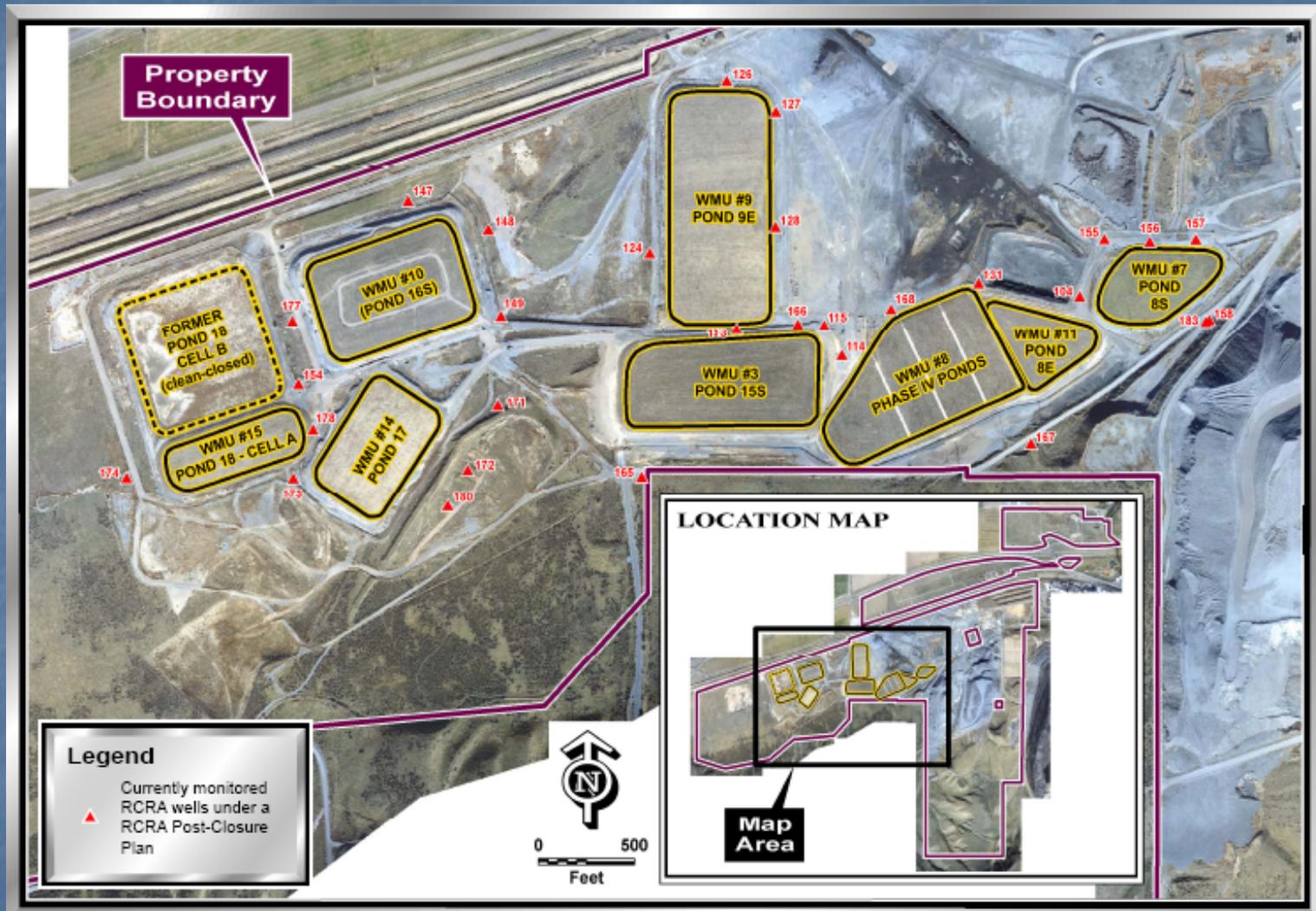
# Eastern Michaud Flats – Simplot Schedule

- Fall 2008 – Groundwater Extraction and Groundwater Monitoring System Designs.
- Winter 2008/2009 – Remedial Action Work Plan.
- Spring 2009 – Remedial Action Construction.

# Eastern Michaud Flats – Off-plant

- Evaluation of human health and ecological risks associated with off-plant soil, surface water, and sediment ongoing.
- Currently determining the scope of additional characterization efforts.
- Schedule for additional activities is under development.

# FMC's RCRA Ponds



November 2007

# FMC's RCRA Ponds

- 8 Ponds
- Contain wastes from the production of elemental phosphorus
- Size: 3.2 acres to 12.9 acres
- Capacity: 27 acre-feet to 140 acre-feet

# FMC's RCRA Ponds

- Types of Wastes:
  - Water Containing Phosphorus ("Phossy Water") and Precipitator Slurry
  - Contaminated Water from Manufacturing Processes and Equipment
  - Ponds were dewatered between 1993 and 2006
  - Phosphorus solids can ignite when exposed to air

# How Are the Wastes Managed?

## ■ CAPs

All ponds were dewatered and capped between 1993 and 2006

Caps generally consist of 1' of sand and gravel, layers of plastic synthetic, and 7' of sand, slag, gravel and topsoil.

## ■ LINERS

All ponds except 8S are lined

Liners consist of at least one layer of plastic synthetic material and soil

## ■ LEACHATE COLLECTION

Some ponds have a system to collect and remove leachate

## ■ CONTINGENCY GAS COLLECTION SYSTEM

All ponds have piping for a gas collection system

# RCRA Post-Closure

Post-Closure Plan for each pond includes requirements for:

- Maintenance of ponds to prevent damage to the caps
- Temperature and pressure monitoring as an indicator of possible gas generation from the waste within the ponds
- Long-term ground-water monitoring

# Possible additional post-closure requirements

- Direct measurements of phosphine
- Evaluation of whether monitoring is needed for other gases of concern
- Perimeter soil gas monitoring
- Risk-based levels for phosphine and other gases of concern as triggers for potential corrective measures
- Expanded list of chemicals that are being monitored in ground water

# Steps in the post-closure plan modification process

- Draft Modifications
- Public Comment Period/Public Meeting
- Response to Comments
- Final Determination and Issuance of Post-Closure Plan Modifications

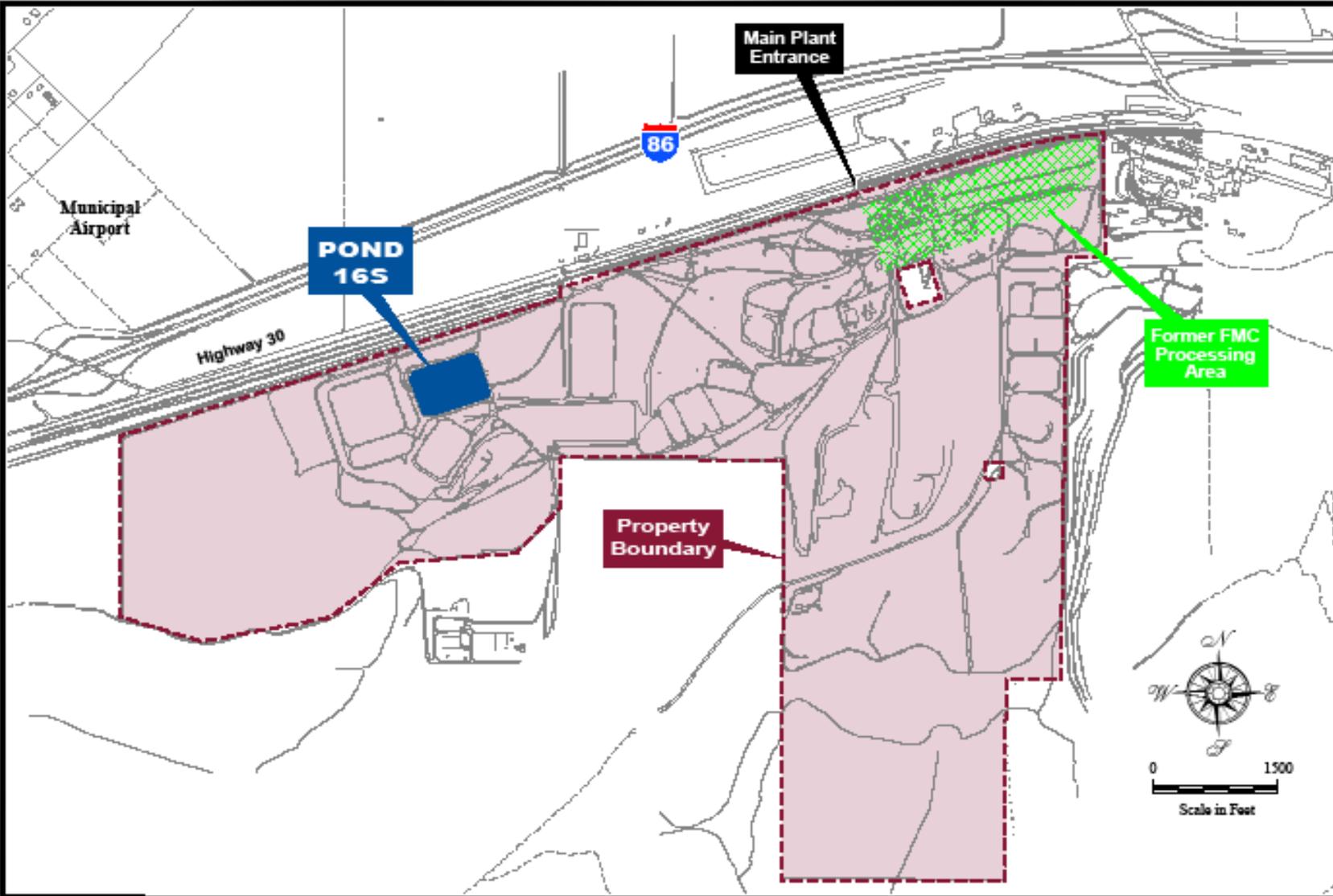
# Contact information

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# FMC Pond 16S

- Constructed in 1993.
- Final closure in 2005.
- In February 2006, high concentrations of toxic and flammable gas detected in temperature monitoring ports (TMPs).
- In June 2006, intermittent emissions of smoke observed from TMPs (auto-ignition of phosphine gas in TMP wells).

# POND 16S SITE MAP



# FMC Pond 16S

- In June and September 2006, intermittent emissions of smoke were observed from Pond 16S temperature monitoring ports (TMPs).



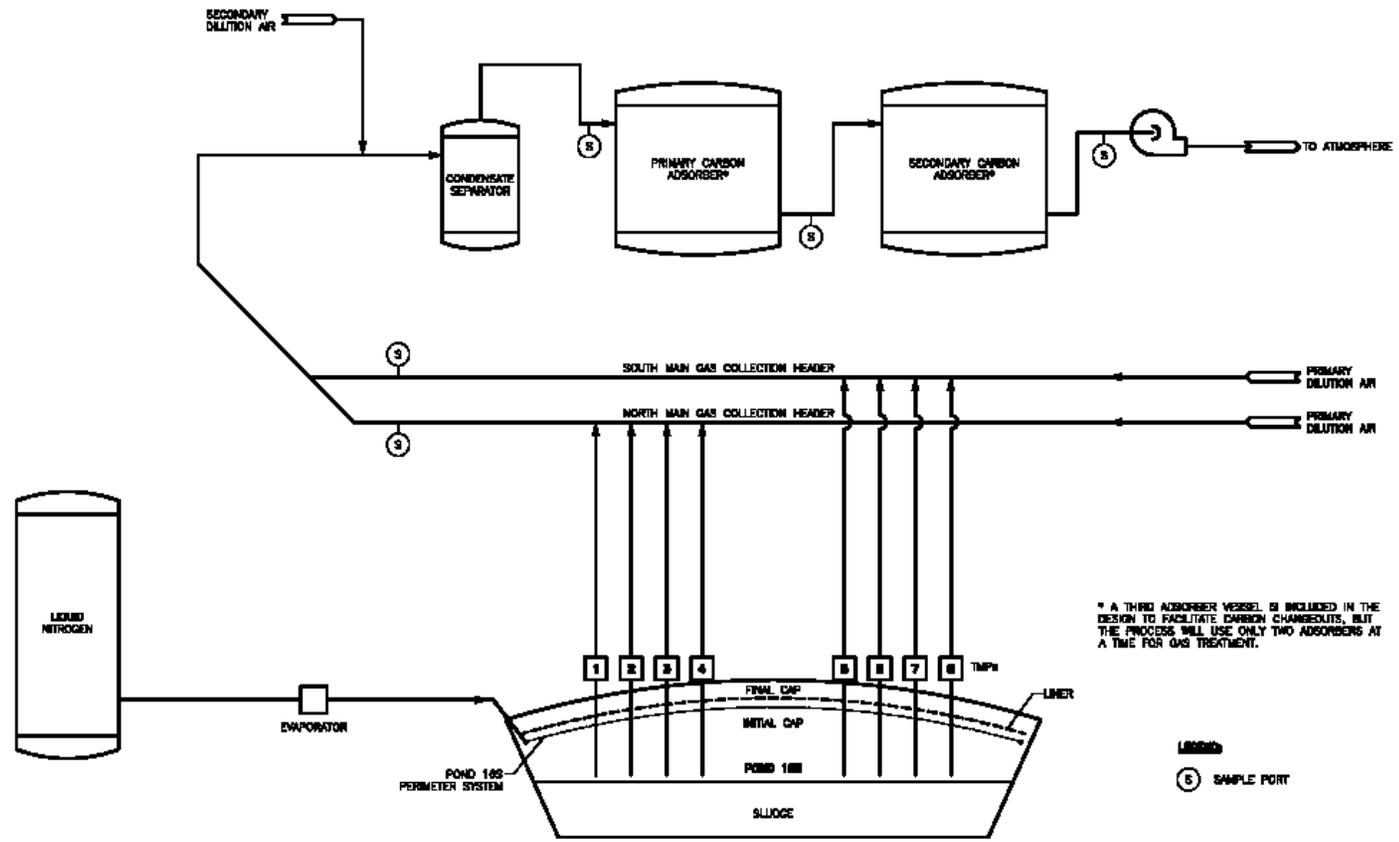
# FMC Pond 16S

- EPA issued CERCLA Order to FMC in December 2006, requiring:
  - FMC characterize gas problem under Pond 16S cap.
  - Conduct ambient air monitoring and cap leak detection monitoring.
  - Design, build and operate a gas extraction and treatment system (GETS) to reduce gas concentrations under the cap to safe levels.



# FMC Pond 16S

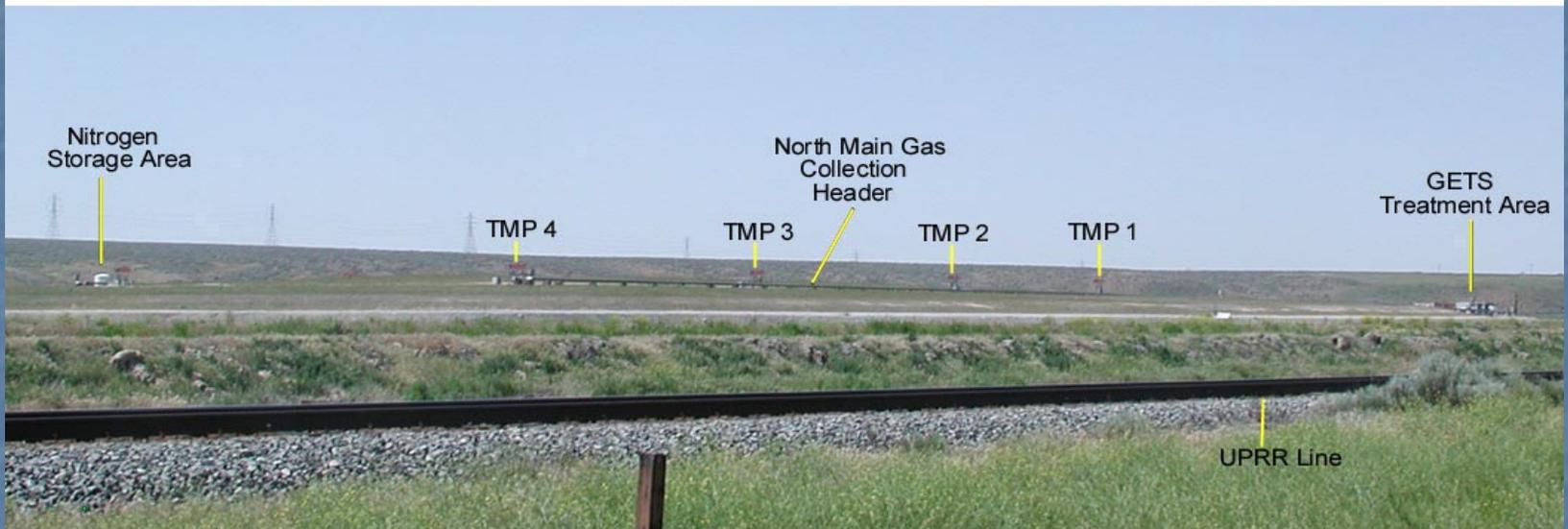
- Sample and monitoring results received so far indicate:
  - High concentration of phosphine gas continues to be generated under Pond 16S cap.
  - Phosphine gas is not detected in ambient air.
  - Phosphine is detected at the surface of Pond 16S.
  - Phosphine gas is detected in soils near the surface at the perimeter of Pond 16S.



\* A THIRD ADSORBER VESSEL IS INCLUDED IN THE DESIGN TO FACILITATE CARBON CHANGES, BUT THE PROCESS WILL USE ONLY TWO ADSORBERS AT A TIME FOR GAS TREATMENT.

LEGEND  
 (5) SAMPLE PORT

GETS PROCESS FLOW DIAGRAM



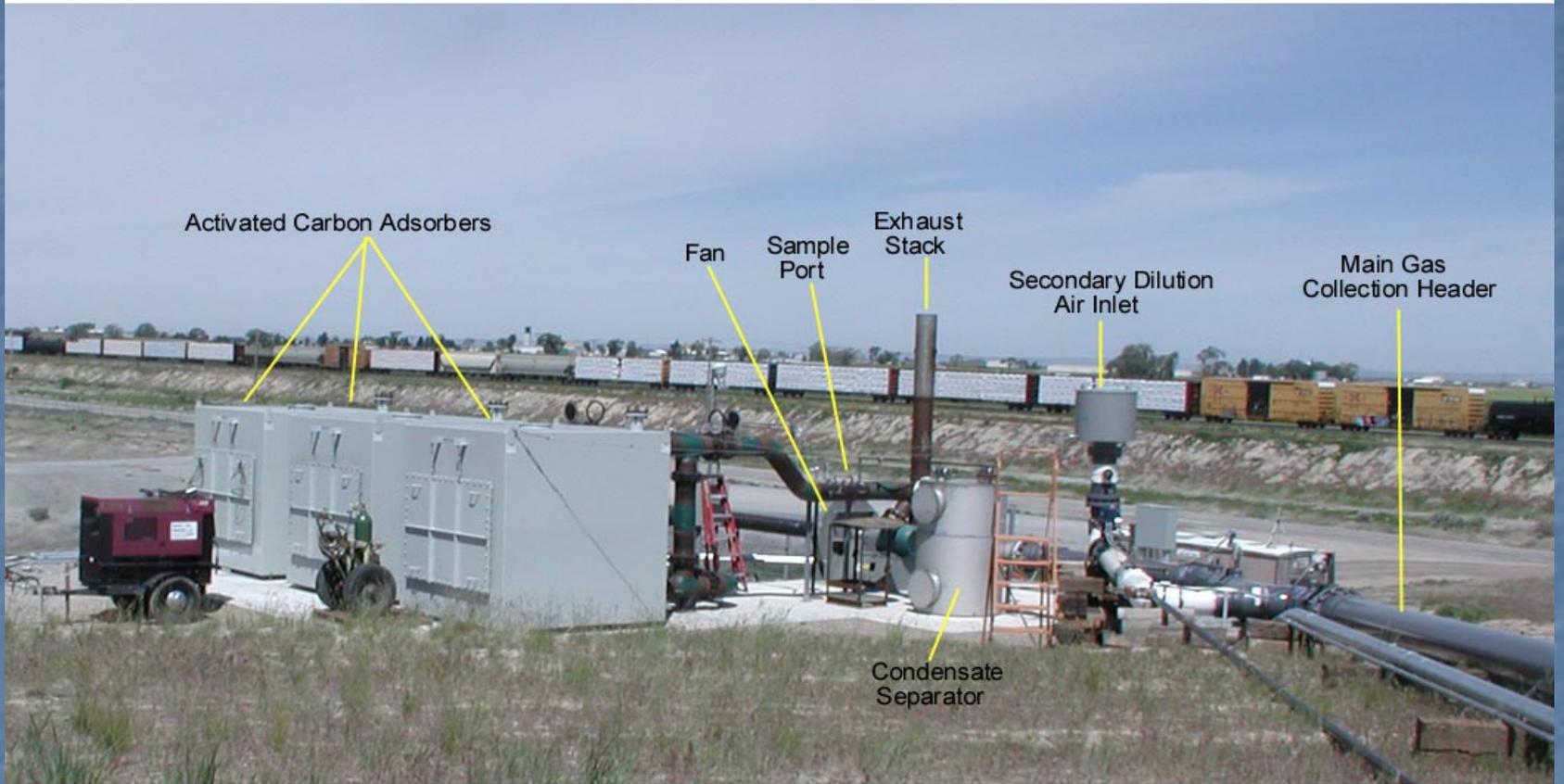
FMC Pond 16S Gas Extraction Treatment System (GETS)  
(View from Highway 30)



Pond Gas Extraction Point (1 of 8)



Nitrogen Injection System



Carbon Treatment Unit

# FMC Pond 16S Update

- In April 2008 FMC completed construction of the long-term gas extraction and treatment system (GETS) approved by EPA.
- At initial start-up in May, 2008, a problem with overheating of the carbon in the carbon treatment units occurred that resulted in a short-term release of phosphine gas above an acceptable level. The system was immediately shut down. No levels of phosphine gas was detected in ambient air, either in the vicinity of Pond 16S or at the FMC facility boundary.
- FMC is presently going through a series of tests to determine the exact nature and cause of the problem. The cause of the problem is still not resolved and the GETS is still not operating at near full capacity.

# FMC Pond 16S Update

- Pond gases are continuing to generate at Pond 16S.
- While the tests of the long term system are ongoing, the smaller scale mobile treatment system is continuing to operate and treat pond gases, but at a much lower rate than should be achieved when the gas extraction and treatment system is in full operation.
- Additionally, FMC is conducting daily monitoring of ambient air and the system discharge to ensure that no gasses are released that represent a risk to on-site workers or the public.

# FMC Pond 16S Update

- Planned Removal Action Schedule:
  - Complete testing and GETS optimization – summer 2008
  - Remove and treat gas to 10% of the lower explosive limit – estimated minimum 12 months (summer/fall 2009)
  - Continue to operate GETS and monitor gas concentrations for additional minimum 12 months (summer/fall 2010)

Questions?

# Community Involvement Coordinator for the Eastern Michaud Flats Superfund Site

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# Eastern Michaud Flats Websites

<http://yosemite.epa.gov/r10/CLEANUP.NSF/sites/emichaud/>

[http://yosemite.epa.gov/r10/CLEANUP.NSF/sites/emichaud/\\$FILE/POND-16S-FS-EMF-PN.pdf](http://yosemite.epa.gov/r10/CLEANUP.NSF/sites/emichaud/$FILE/POND-16S-FS-EMF-PN.pdf)